Title Physico-chemical quality characteristics of lemon grass as affected by maturity stages, packaging materials and storage durations

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Abstract

Lemongrass is widely cultivated in Malaysia, since it is commonly used as a culinary herb. However, interests in the industrial and medicinal application of lemon grass have resulted in a high demand for superior quality of fresh lemon grass. There are two key issues that affect commercial production of lemongrass, namely maturity stage at harvest and storage practices. This study was conducted to determine the effects of different maturity stages, packaging materials and storage durations on physico-chemical quality characteristics oflemongrass. Lemongrass was planted at the Universiti Agricultural Park, Universiti Putra Malaysia, using a randomized complete block design, arrange in the factorial experiment of (3 harvesting date, 2 packaging materials and 4 storage duration), with four replications. After harvest lemon grass pseudostems were packed, and stored at 10°C. The physico-chemical characteristics of the lemongrass were evaluated for firmness, chlorophyll, anthocyanin, ascorbic acid, and total phenolic contents. Results indicated that there were no interaction effects between the treatments on firmness and ascorbic acid. Firmness increased as maturity stage advances from 5.5 to 7.5 months after planting, but decreased as storage duration was increased. Ascorbic acid decreased with increased in maturity stages and storage duration. During the storage, data showed that firmness and ascorbic acid were not affected by the use of the clear and black polyethylene (PE) packaging materials (bag). Chlorophyll content oflemongrass harvested at 5.5, 6.5 and 7.5 months after planting tended to decrease during storage. In contrast, the anthocyanin content increased when the storage duration was increased, but it was lower in pseudostems that were packed in black PE bag than those packed with clear PE bag. There was a significant interaction effect of maturity stage at harvest and storage duration oflemongrass on total phenolic content of lemongrass pseudostems. Total phenolic content increased by 35.90%, 35.80% and 56.52% when lemongrass was harvested at 5.5, 6.5 and 7.5 months after planting, respectively, as storage duration increased to 15 days of storage. By the end of the storage duration, lemongrass harvested at 7.5 months after planting contained the highest total phenolic content compared to those harvested at 5.5 and 6.5 months after planting. Thus,

lemongrass should be harvested between 6.5 to 7 months after planting to obtain optimum postharvest quality characteristics.